positions, and detecting the transmitted radiation at each position to create radiation transmission data. The image of the object is then constructed by analyzing the radiation transmission data.

The present invention has the advantage of producing a three-dimensional image of a scene using a total radiation dose which is comparable to or less than the dose used in conventional screening methods. The invention has the further advantage of requiring a smaller number of images than conventional CT, thus reducing the amount of time that a patient must remain stationary. In particular, the invention provides an improved method of performing clinical mammography that results in earlier diagnosis of breast cancer, fewer negative biopsies, decreased study time and fewer call backs after initial screening exams.

BRIEF DESCRIPTION OF THE DRAWINGS

This invention is pointed out with particularity in the appended claims. The above and further advantages of this invention may be better understood by referring to the following description taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a schematic block diagram of an embodiment of an imaging system according to the invention;

Fig. 2 is a schematic operational representation of the radiation source and detector of Fig. 1;

Fig. 3 is a schematic block diagram of another embodiment of an imaging system according to the invention;

Fig. 4 is a schematic block diagram of an embodiment of an imaging system having a separate motion controller and actuator for the radiation source and the detector;

Fig. 5 is a flow chart illustrating the steps performed by an imaging system according to the present invention to generate an image of the target scene;

Fig. 6 is a graphical representation in the frequency domain of transmission images collected in the spatial domain;

Figs. 7A-7F are graphical representations in the frequency domain of transmission images collected in the spatial domain;